

## **Morphology and yield of ratoon forage sorghums under varying salinity and irrigation frequency**

### **ABSTRACT**

The response of two forage sorghum [*Sorghum bicolor* (L.) Moench] varieties, Speedfeed and KFS4, to salinity and irrigation frequency were studied from January to December 2009. The two varieties were grown under salinity levels of 0, 5, 10 and 15 dS m<sup>-1</sup> and irrigated when the leaf water potential reached -1 (control), -1.5 and -2 MPa. Salinity and irrigation frequency significantly affected stem diameter, number of tillers, plant height, total leaf area and cumulative dry matter yield of ratoon forage sorghum ( $P<0.01$ ). Low soil water (-2 MPa) reduced plant height in non-saline and medium saline conditions by 33.4 and 28.9%, respectively, whereas in highly saline soil there was 34.4% reduction in plant height even at medium water stress (-1.5 MPa). Maximum number of tillers (2.48 tillers plant<sup>-1</sup>) was produced in non-saline soil. Low soil water content and high salinity reduced the number of tillers produced. Total leaf area of plants also decreased with increasing salinity and irrigation interval. Overall Speedfeed variety had stems with a smaller mean diameter than KFS4 and produced a higher number of tillers than KFS4. Regardless of variety, leaf firing increased with increasing salinity, reaching 59.95% in the extreme salinity treatment of 15 dS m<sup>-1</sup>, and it increased with increasing water stress reaching 48.77% in the extreme water stress treatment of -2 MPa. However, there was less water deficit and salinity injury noticeable in KFS4 at all irrigation levels compared to Speedfeed. Most of the decline in growth parameters was significant only at -2 MPa irrigation frequency which means irrigation of forage sorghum can be withheld till leaf water potential reaches -1.5 MPa.

**Keyword:** Salinity; Leaf water potential; Morphology; Forage re-growth; *Sorghum bicolor*